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these bodies we shall be enabled to detect orbital motion of the smaller ones about the larger. If this were shown to exist, we should at once have the means of determining the mass of this cometary system. These changes may, however, be due to perspective.

So far as we know, the phenomenon presented by this comet is extremely rare. It is needless to repeat the story of Biela's comet. In 1845 it separated into two distinct comets, which traveled side by side, and returning at the appointed time, they were seen to be widely separated—indeed, moving in distinctly separate paths; they then disappeared, to be seen no more in the heavens. One of the comets of 1861 was seen double for a few days. Some companions were seen moving with the Great Comet of 1882, but no measurements were made. This covers our knowledge of multiple comets, or comets with companions, unless, indeed, we accept the evidence of the Chinese records, which possibly describe comets that consisted of two or more parts.

MT. HAMILTON, September 30, 1889.

NOTE.—In order not to delay the publication of the present number, the printing of two papers on Drawings of *Jupiter* in the years 1875-1883, by Messrs. HOLDEN and BARNARD, is postponed to the next number.

NOTICES FROM THE LICK OBSERVATORY.

PREPARED BY MEMBERS OF THE STAFF.

PHOTOGRAPHING THE MILKY WAY.

The great success obtained by Mr. BARNARD in his preliminary experiments with the WILLARD portrait lens ($a = 5.9$, $f = 30.7$) has led to the determination to employ it in making a systematic study of the Milky Way by photography. For this purpose it has been mounted at the object-glass end of the tube of the great telescope, and arrangements made by which the lens can be capped and uncapped from the eye end. The driving clock of the great telescope (with a control) will keep the camera directed at the star-group chosen during an exposure of two hours. An independent equatorial stand for this instrument is very desirable, but cannot be had at present. Plates 8 x 10 are used, which correspond to about 16 by 20 degrees. The definition is good over the central 10 or 11 degrees.

E. S. H.

OCCULTATION OF *JUPITER*, 1889, SEPTEMBER 3.

PHENOMENON OBSERVED.	INITIALS OF THE OBSERVER.			
	LICK OBSERVATORY MEAN TIME.			
	J. E. K.	E. E. B.	C. B. H.	A. O. L.
	h. m. s.	*m. s.*	*m. s.*	*m. s.*
First Contact of *Jupiter*	5 25 39.1	25 41.3	25 43.5*	25 41.6
Second Contact of *Jupiter* ..	5 27 50.7	27 47.3	27 47.8	27 43.9
Reappearance of Satellite II.	6 11 33 ±	......	......	......
Reappearance of Satellite IV.	6 16 46.2	......	......	......
Third Contact of *Jupiter* ...	6 19 17.2	......	......	19 26.2
Fourth Contact of *Jupiter* ...	6 21 39 ±	21 38.3::	21 39.5::	21 32.2
Reappearance of Satellite I..	6 23 12.8	23 15.7::	23 16.0†	......
(Instrument employed)	*36-inch Tel.*	*12-inch Tel.*	*6½-in. Tel.*	*Comet seeker.*

OBSERVERS' NOTES.—* 3-5 secs. late; † 2-3 secs. late.

Mr. SCHAEBERLE obtained several photographs of the Moon and *Jupiter* after IVth Contact.

Observers: Mr. KEELER = J. E. K.; Mr. BARNARD = E. E. B.; Mr. HILL = C. B. H.; Mr. LEUSCHNER = A. O. L.

These observations have been printed *in extenso* in the *Astronomical Journal*, Vol. 9, page 84 *et seq.*

EXAMINATION OF STELLAR PHOTOGRAPHS.

If it is desired to obtain *all* the information which can be had from a given negative, it is necessary to make a positive copy of it on glass, and to examine both negative and positive independently. Each presents a different set of contrasts. The negative will show the empty spaces and lanes between stars; the positive will show the arrangement of the stars themselves. It is only by examining both that *all* the information can be had from a given exposure. This is certainly true for stellar photographs, and it is even more important in regard to photographs of surfaces,—as nebulæ, the corona, etc. It should also be remembered that no single negative can establish the existence of a new nebula. At least two are required.